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10/509,166	09/27/2004	Robert Appleyard	WATE-0013	5096
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WOODCOCK WASHBURN LLP ONE LIBERTY PLACE, 46TH FLOOR 1650 MARKET STREET PHILADELPHIA, PA 19103			BUI PHO, PASCAL M	
			ART UNIT	PAPER NUMBER
			2878	

DATE MAILED: 10/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/509,166

Applicant(s)

APPLEYARD, ROBERT

Examiner

Pascal M. Bui-Pho

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15, 17-19, 26-28, 32, 34-40, 43-51 and 53-57 is/are rejected.
- 7) ☒ Claim(s) 16, 20-25, 29-31, 33, 41, 42 and 52 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 September 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11 April 2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the industrial press (**Claims 1, 32, 53, and 57**) and the speed control point (**Claims 1 and 32**) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet"

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pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. New corrected drawings for Figs. 6 and 7 in compliance with 37 CFR 1.121(d) are required in this application because of insufficient quality. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Objections

5. Claims 1, 8, 15, 32, and 39 are objected to because of the following informalities:

With regards to claims 1 and 32, each instance of “including” should be changed to – including:--.

With regards to claim 8, on line 2, “said” should be deleted.

With regards to claim 15, lines 1-3 should be rewritten as follows --The safety system according to claim 14 wherein the two planar laser beams are emitted by the laser emitting means with a first planar laser beam being spaced further from the leading edge than a second planar laser beam--.

With regards to claim 39, on line 3, “as” should be changed to --at--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 17-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 17 and 34 recite the limitation "the number of pulses at the pulse rate" in line 2.

There is insufficient antecedent basis for this limitation in the claim.

Claims 18, 19, 35, and 36 are also rejected under 35 U.S.C. 112, second paragraph because they inherit the indefiniteness from the claim they depend upon.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 2, 6, 9, 13-15, 26-28, 32, 43-45, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fiessler (US 6,752,253).

With regards to claim 1, Fiessler discloses in Fig. 1 a safety system for an industrial press having a moveable section (10), the safety system including: a laser device (20-22) for emitting a plurality of parallel continuous planar beams (23, 23a) having a generally constant lateral width; a light receiver (20-22) for receiving the planar beams and for detecting when an object intersects at least one of the planar beams; and a controller (26) for stopping or preventing motion of the moveable section when the light receiver detects that at least one of the planar beams has intersected an object (25), said controller further adapted to decelerate the moveable

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section from a first speed (when moveable section is moving) to a second speed (when moveable section is stopped or decelerating) within a deceleration zone. Although Fiessler discloses a set safety distance wherein the moveable section decelerates (Column 4, lines 29-62), Fiessler lacks a clear specification of said controller decelerating the moveable section within a deceleration zone defined between a first point at which a first planar beam passes a speed control point and a second point at which a second planar beam passes the speed control point. However, selecting an optimal safety distance for better system performance would have been obvious to one of ordinary skill in the art. Consequently, it would be obvious to select a safety distance wherein said section decelerates within a desired deceleration zone and modify Fiessler accordingly in order to provide a system of lesser sensitivity.

With regards to claim 32, Fiessler discloses in Fig. 1 a safety system for an industrial press having a moveable section (10), the safety system including: a laser device (20-22) for emitting a continuous planar beam (23, 23a) of rectilinear cross-section having generally constant lateral depth; said rectilinear beam having a proximate and distal face relative to a leading edge (12) of the moveable section; a light receiver (20-22) for receiving the planar beams and for detecting when an object intersects at least one of the planar beams; and a controller (26) for stopping or preventing motion of the moveable section when the light receiver detects that at least one of the planar beams has intersected an object (25), said controller further adapted to decelerate the moveable section from a first speed (when moveable section is moving) to a second speed (when moveable section is stopped or decelerating) within a deceleration zone. Although Fiessler discloses a set safety distance wherein the moveable section decelerates (Column 4, lines 29-62), Fiessler lacks a clear specification of said controller decelerating the

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moveable section within a deceleration zone defined between a first point at which the proximate face passes a speed control point and a second point at which the distal face passes the speed control point. However, selecting an optimal safety distance for better system performance would have been obvious to one of ordinary skill in the art. Consequently, it would be obvious to select a safety distance wherein said section decelerates within a desired deceleration zone and modify Fiessler accordingly in order to provide a system of lesser sensitivity.

With regards to claim 2, Fiessler discloses a safety system wherein the first and second planar beams (23, 23a) are adjacent (generally depicted in Fig. 1).

With regards to claim 6, Fiessler discloses a safety system wherein further including a plurality of laser devices (20-22) used to provide the continuous planar laser beams.

With regards to claim 9, Fiessler discloses a safety system wherein the light receiver (20-22) includes an array of light receiving elements, the elements being aligned along a common axis and located at an end of a receiver body of the light receiver (generally depicted in Fig. 1).

With regards to claim 13, Fiessler discloses a safety system wherein the industrial press further includes a stationary section (9) such that the laser beams (23, 23a) are located between the moveable (10) and stationary (9) sections of the industrial press (generally depicted in Fig. 1).

With regards to claim 14, Fiessler discloses a safety system wherein the moveable section (10) includes a leading edge (12) and each laser beam (23, 23a) is spaced at a different distance to the leading edge.

With regards to claim 15, Fiessler discloses a safety system wherein the two planar laser beams (23, 23a) are emitted by the laser emitting means (20-22) with a first planar beam (23a) being spaced further from the leading edge (12) than a second planar laser beam (23), said first and second planar beams defining a single deceleration zone.

With regards to claims 26-28 and 43-45, Fiessler discloses a safety system comprising a safety distance of 3 to 10 mm (Column 4, lines 13-14) and an inherent unspecified rectilinear beam depth (one of ordinary skill in the art would recognize that all beams have a depth/diameter/radius), but lacks a clear specification of a speed control point being located 2mm above a surface of material, the depth of the planar/rectilinear beam being 10mm, or the proximate face and the moveable section being spaced by 4mm. At the time of the invention, selecting an optimal position, depth, or spacing for said control point, rectilinear beam, or section, respectively, would have been obvious to one of ordinary skill in the art. Consequently, it would have been obvious to modify Fiessler accordingly by adjusting the moveable section and/or the beam in order to provide a more desirable output.

With regards to claim 51, Fiessler discloses a safety system wherein the light receiver includes a two-dimensional array of light-receiving elements (20-22), the elements being placed in a rectilinear distribution and located at an end of a receiver body of the light receiver (generally depicted in Figs. 1 and 2).

10. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fiessler (US 6,752,253) in view of De Coi (US 6,124,586).

With regards to claims 11 and 12, Fiessler discloses in Fig. 1 a safety system comprising planar beams (23, 23a), but lacks a clear specification of said beams being

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multiplexed such that each laser beam is sequentially turned off and on creating pulses pulsating at a pre-determined pulse rate so that a light receiver only detects one of said laser beams at one time. In an analogous measuring art, De Coi discloses in Fig. 2 a system wherein laser beams (33, 33') are multiplexed such that each laser beam are pulsating at a pre-determined pulse rate (2 Hz) so that the light receiver (35, 35') only detects one laser beam at one time. At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Fiessler by pulsating the planar beams at a pre-determined pulse rate, as taught by De Coi, in order to provide a longer lasting emitter and receiver (Abstract).

11. Claims 17-19 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fiessler (US 6,752,253) in view of Harrison et al. (US 3,750,436).

With regards to claims 17 and 34, Fiessler discloses in Fig. 1 a safety system wherein a speed measurement is performed by a controller (31) as a moveable section (10) travels a predetermined distance, but lacks a clear specification of said controller measuring a number of pulses at a pulse rate as a moveable section (10) travels. In an analogous measuring art, Harrison et al. disclose in Figs. 1 and 2 a system for measuring the speed of a moveable section (18) by measuring the number of pulses (generated by generator 24) and counted by counter (25) as the moveable section travels. At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Fiessler by incorporating a pulse counter, as taught by Harrison et al., in order to provide a more accurate positioning of the moveable section.

With regards to claims 18 and 35, Fiessler discloses a safety system wherein the predetermined distance is bisected by the speed control point (generally depicted in Fig. 1).

With regards to claims 19 and 36, Fiessler discloses a safety system wherein the predetermined bisects the speed control point, but lacks a clear specification of said distance being 2 mm and commencing 1 mm above the speed control point and finishing 1 mm below the speed control point. Selecting a specific safety distance, however, would have been obvious to one of ordinary skill in the art. Consequently, it would have been obvious to one of ordinary skill in the art to increase and/or decrease the safety distance and modify Fiessler accordingly in order to add and/or subtract system safety, if so desired.

12. Claims 37-40, 46-48, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fiessler (US 6,752,253), hereinafter referred to as '253, in view of Fiessler (US 6,677,574), hereinafter referred to as '574.

With regards to claims 37 and 38, '253 discloses in Fig. 1 a safety system for an industrial press comprising a controller (26) for stopping or preventing motion of a moveable section (10) from a first speed (when moveable section is moving) to a second speed (when moveable section is stopped or decelerating), but lacks a clear specification of said first speed being a maximum operating speed and said second speed being a final crawl speed. In an analogous industrial press art, '574 discloses in Figs. 1-3 a safety system for an industrial press comprising, among other features, a controller (31) for stopping or preventing motion of a moveable section (10) from a first speed (when moveable section is moving) to a second speed (when moveable section is stopped or decelerating), wherein said first speed is a maximum operating speed (Column 4, lines 35-37) and said second speed being a final crawl speed (Column 4, lines 37-39). At the time of the invention, it would have been obvious to one of

ordinary skill in the art to modify '253 by utilizing a maximum operating speed and a final crawl speed, as taught by '574, in order to provide faster and more efficient manufacturing.

With regards to claims 39, 40, and 46, '253 and '574 disclose a safety system wherein the controller (26 of '253, 31 of '574) stops or prevents motion of a moveable section (10) from a first speed (when moveable section is moving) to a second speed (when moveable section is stopped or decelerating), but lack a clear speed rate for said first and second speed. At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify '253 and '574 by selecting an optimal speed rate in order to provide faster and more efficient manufacturing.

With regards to claim 47, '253 discloses a safety system wherein the controller further decelerates the moveable section (10) from the second point to a third point located at which the leading edge (12) of the moveable section passes the speed control point (generally depicted in Fig. 2).

With regards to claim 48, although '253 and '574 lack a clear disclosure of decelerating a moveable section (10 of '253) from 20 mm per second to 10 mm per second between the second point and the third point, selecting a desired speed for said moveable section would have been obvious to one of ordinary skill in the art. Consequently, it would have been obvious to modify '253 and '574 accordingly in order to provide greater safety and system control.

With regards to claim 57, '253 discloses in Fig. 1 a method of operating a safety system for an industrial press having a moveable section (10) and a stationary section (9), the safety system providing a plurality of continuous planar laser beams (23, 23a) having a generally constant lateral width, each laser beam being spaced at varying distances from the moveable

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section, the method including moving the moveable section towards the station section at a relatively high speed (when moving); starting deceleration of the moveable section when one said laser beam reaches a speed control point (when light beam is interrupted) located immediately adjacent the stationary section. '253 however lacks a clear specification of moving the moveable section at a final crawl speed when a second laser beam reaches the speed control point, the moveable section continuing to move at said final crawl speed towards said stationary section. In an analogous safety art, '574 discloses a method of operating a safety system for an industrial press comprising the step of moving moveable section (10) at a final crawl speed when a second laser beam reaches the speed control point, the moveable section continuing to move at said final crawl speed towards a stationary section (11) (Column 4, lines 35-67). At the time of the invention, it would have been obvious to modify '253 and provide a final crawl speed, as taught by '574, in order to provide faster and more efficient manufacturing.

13. Claims 3-5, 8, 10, 49, 50, and 53-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fiessler (US 6,752,253) in view of Petrohilos et al. (US 4,007,992).

With regards to claims 3-5, 10, 49, and 50, Fiessler discloses in Fig. 1 a safety system comprising a plurality of laser emitters (20-22) for respectively emitting a continuous planar/rectilinear laser beam, but remains silent with regards to a lens assembly comprising a cylindrical prism for respectively converting said laser beam, a converging lens for refocusing the laser beam, and a cylindrical lens to focus the beam onto a light receiver array. In an analogous optics art, Petrohilos et al. disclose in Figs. 3 and 4 a system comprising a light source (28), a cylindrical prism (34, 54) for converting said light source, a converging lens (40, 60) for refocusing the laser beam, and a cylindrical lens (68) to focus the beam onto a light receiver (70).

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At the time of the invention, it would have been obvious to one of ordinary skill in the art to select a known available optical configuration, as taught by Petrohilos et al., in order to provide greater control of light modulation.

With regards to claim 7, Fiessler discloses a safety system wherein peripheral edges of the plane defined by the planar laser beam (23, 23a) extend laterally beyond opposing sides of the moveable section (10).

With regards to claim 8, herein considered dependent upon any one of claims 1-7, Fiessler discloses a light receiving body (20-22), but remains silent with regards to a single light receiver being used to receive the planar beams. In an analogous detection art, Petrohilos disclose in Fig. 4 a system wherein a single light receiver (70) is used to receive a plurality of planar beams utilizing a condensing cylindrical lens (68). At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Fiessler by utilizing a single light receiver, as taught by Petrohilos et al, in order to reduce the number of light receivers and consequently reduce manufacturing costs.

With regards to claim 53, Fiessler discloses in Figs. 1 and 2 a method for setting a safety distance between a single planar laser beam (23, 23a) and a leading edge of a moveable section (10) of an industrial press, the method including the steps of: converging the planar beam along an axis parallel to the movement of the moveable section until the leading edge interrupts the planar beam (generally depicted in Fig. 1) and wherein the planar beam is increased/decreased along the axis by a pre-determined distance set as the safety distance (Column 4, line 39 – Column 5, line 4), but lacks a diverging step for diverging the planar beam away. In an analogous detection art, Petrohilos et al. disclose in Fig. 4 a step for diverging a

planar beam (50a) away utilizing a condensing cylindrical lens (68). At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify Fiessler by selecting known available optics in order to control the modulation of the planar beam and in turn gain greater control of the desired safety distance.

With regards to claim 54, Fiessler discloses a method performed under automatic control (Column 4, lines 48-52).

With regards to claim 55, although Fiessler and Petrohilos et al. disclose an automatic control (Column 4, lines 48-52), a clear calibration step for said industrial press is lacking. At the time of the invention, however, it would have been obvious to one of ordinary skill in the art to modify Fiessler and Petrohilos et al. accordingly in order to provide more reliable sensing results.

With regards to claim 56, Fiessler discloses a method wherein the planar laser beam (23, 23a), the associated emitters and receivers (20-22), and the controller (26) form part of a safety system mounted to the industrial press (generally depicted in Fig. 1).

Allowable Subject Matter

14. Claims 16, 20-25, 29-31, 33, 41, 42, and 52 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. The following is a statement of reasons for the indication of allowable subject matter:

The prior arts of record fail to anticipate, either solely or in combination, a safety system

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wherein a first and second speed of a moveable section is measured at a respective first point at which a first planar beam passes a speed control point and second point at which a second planar beam passes the speed control point (**Claims 16 and 33**).

The prior arts of record fail to anticipate, either solely or in combination, a safety system wherein as each planar beam passes a speed control point the respective planar beam is muted whereby intersection of the planar beam by an object will not prevent motion of a moveable section (**Claim 24**).

The prior arts of record fail to anticipate, either solely or in combination, a safety system wherein as a rectilinear beam progressively passes a speed control point the rectilinear beam is correspondingly progressively muted whereby intersection of the rectilinear beam at a muted portion of the rectilinear beam by an object will not prevent motion of a moveable section (**Claim 41**).

The prior arts of record fail to anticipate, either solely or in combination, a safety system wherein a rectilinear beam further includes a rectilinear portion of depth sufficient to span from the proximate face to a partial intersection with a leading edge of a moveable section, said rectilinear portion having a generally constant lateral width, wherein the light receiver further includes light receiving elements corresponding to the rectilinear portion, such that the light receiving elements corresponding to an area where the moveable section intersects with the rectilinear portion do not function to prevent movement of the moveable section (**Claim 52**).

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

I) Nagai et al. (US 4,489,578) disclose a slide stop position control apparatus of a press machine which can automatically effect slide stop position adjustment.

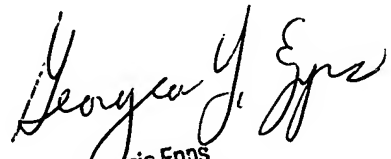
II) Tourres (US 4,170,417) disclose a device for measuring the profile of a body utilizing a plurality planar beams with constant width.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pascal M. Bui-Pho whose telephone number is (571) 272-2714. The examiner can normally be reached on Monday through Friday: 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Pascal M. Bui-Pho
Examiner, Art Unit 2878
26 September 2006


Georgia Epps
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